REMARKS

By this amendment, Applicants have amended the specification to remove a redundant phrase, cancelled claims 12, 20 and 21, amended claims 1, 2, 9, 10, 13, 15, 16, 19, 22 and 25.

The Examiner has rejected claims 1-5, 7, 8, 11, 12, 12, 15, 20, 22-24 under 35 U.S.C. 102(b) as being anticipated by Manome et al (US 4,608,657).

In regards to Claims 1-5 and 20, Manome et al. disclose a method for testing probe calibration comprising storing at least one operation parameter of an input channel in communications with a probe (Column 7, lines 59-64; Fig. 10A), determining if a calibration signal communicated by the probe exhibits a characteristic indicative of inappropriate probe operation (Column 2, lines 17-19), adapting at least one calibration parameter, including a probe compensation parameter (variable capacitance), in response to determination of inappropriate probe operation (Column 5, lines 31-35), and retrieving the operational parameter of the input channel after determination that the inappropriate probe characteristic has been reduces to a threshold level (Column 7, lines 59-64). Further, Manome et al. teach initiating a calibration sequence in response to an indicium of a user request to calibrate (Column 5, line 31-35) and displaying a user message indicative of a completed calibration (Fig. 6, element 118).

In regard to Claim 7, Manome et al. teach the method described above, wherein the calibration parameter comprises at least one parameter of the input channel (Column 7, lines 59-64) and wherein the operational parameter tends to offset the characteristic indicative of inappropriate probe operation (Column 5, lines 31-35).

In regard to Claim 8, Manome et al. teach the method described above, wherein the calibration signal is displayed on a display device, sing the display device to determine an inappropriate probe operation (Column 2, lines 48-53).

In regard to Claim 11, Manome et al. teach the method described above, wherein the step of determining comprises comparing the calibration signal to a reference calibration signal, wherein an unfavorable comparison in indicative of inappropriate probe operation (Column 2, lines 8-19).

In regard to Claim 12, Manome et al. teach the method described above, further comprising verifying that the calibration signal is a valid calibrations signal, and avoiding the step of adapting if the signal is found to be valid (Fig. 6).

In regard to Claim 13, Manome et al. teach the method described above, and further modifying the duty cycle and amplitude parameters to verify the calibrations signal (Column

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2, lines 27-34 and 39-47), and verifying that the calibrations signal includes characteristics indicative of the modification imparted to the initial calibration signal (Column 9, lines 43-49).

In regard to Claims 15-22, it is inherent that if a test device has multiple inputs then the testing method disclosed by Manome et al. will work for all of those inputs.

In regards to Claim 23, Manome et al. teach the method disclosed above, further comprises the steps of initiating a calibration sequence to an indicium of a user request to calibrate (Column 5, lines 31-35).

In regards to Claim 24, Manome et al. teach the method of disclosed above, further comprising a cancel (stop) key (Fig. 10A, element 204).

The Examiner has rejected claims 6, 14, 18 and 21 under 35 U.S.C. 103(a) as being unpatentable over Manome et al. in view of Weller (US 6,064, 312).

In regards to Claims 6, 14, 18 and 21, Manome et al. teach the method described above, wherein over-shoot and under-shoot is observed (Column 2, lines 39-47); however, they fail to teach displaying a value of at least one of an over-shoot or under-shoot associates with a calibrations signal communicated by the probe. Manome et al, also fail to determined whether an error condition, due to physical defects in the probe, exists, Manome et al. also fails to disclose displaying the calibrated signal on the display device.

Weller teaches a method of calibrating a testing device, including a device for displaying the calibrate (verification) signal and its functional status (Column 10, lines 1-6), detecting an overshoot or under-shoot associated with a calibration signal communicated by a probe, and displaying a value associated with the error (histogram) (Column 6, lines 10-20). Weller teaches detecting an open ground lead, open signal lead, shorted probe and other physical defects in the probe, in addition to attenuation factor (Column 5, lines 15-19).

In Regard to Claim 14, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the invention discloses in Manome et al. by displaying a value associated with the over or under-shooting of the calibration signal as taught by Weller, for the purpose of allowing the operator to compensate for the error in making adjustments to the testing device.

In regards to Claims 6 and 18, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention disclosed by Manome et al. by detecting the physical errors and the attenuation factor in the probe as taught by Weller for the purpose of avoiding false readings that would occur in the case of physical

errors or an inappropriate assumption of an attenuation factor of zero.

In regard to Claim 21, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention disclosed by Manome et al. by displaying the calibrated signal as taught by Weller for the purpose of avoiding errors due to electrical defects inside the testing device by allowing the operator to manually verify that the signal had in fat been calibrated.

The Examiner has rejected claims 9 and to under 35 U.S.C. 103(a) as being unpatentable over Manome et al. in view of Hoogendijk (US 5,180,973).

In regards to Claims 9 and 10, Manome et al. teach the method disclosed above, but they fail to teach a display device comprising and envelope with which a calibration signal is provided.

Hoogendijk teaches the method of providing a correctly calibrated signal to the display, and modifying the display and signal in a manner consistent with th calibration correction changes (Column 1, lines 45-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method taught by Manome et al. by providing a correctly calibrated signal to the display device and making changes to the display and signal as taught by Hookendijk for the purpose of verifying the proper operation of the testing device by allowing the operator to manually check the calibration.

The Examiner has rejected claims 16, 17 and 18 under 35 U.S.C. 103(a) as being unpatentable over Manome et al. in view of Nygaard et al. (US 6,463,392).

In regards to Claims 16, 17 and 19, Manome et al. teach the method disclosed above, further comprising the steps of initiating a calibration sequence in response to an indicium of a user request to calibrate (Column 5, lines 31-35); however, they fail to teach adapting a temporal offset parameter.

Nygaard et al. teach a device comprising a temporal offset parameter (Column 4, lines 55-67; Column 5, lines 43-55).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention disclosed by Manome et al. by including the step of adjusting the temporal offset of the input signal for the purpose of calibrating the device signal to avoid false readings.

The Examiner has rejected claims 25 and 26 under 35 U.S.C. 103(a) as being unpatentable over Manome et al.

In regards to Claims 25 and 26, Manome et al. teach an apparatus including a

processor adapted to process data representative of at least one of the output signal (Fig. 1, element 28), a calibration signal generator (Column 1, lines 21-25), a memory for storing the operational parameters (Fig. 1 elements 37 and 38) and an oscilloscope (Column 1, lines 11-16). Manome et al. fail to teach having multiple inputs to the oscilloscope; however, it is well known in the art that many oscilloscopes have multiple inputs and one such oscilloscope would be applicable to the test method of Manome et al.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Manome et al. by using a multiple input oscilloscope as is well known to those of ordinary skill in the art for the purpose of being able to calibrate multiple probes, this enabling multiple testing channels to decrease the testing time.

Applicants' claimed invention recites a method and apparatus for calibrating signal analysis devices and associated signal probes. The method has an initial step of storing, in response to a calibration initiation, at least one operational parameter of an input channel in communication with a probe. A calibration signal is applied to the signal probe and verified as being a valid calibration signal. A determination is made if the calibration signal communicated by the probe exhibits a characteristic indicative of inappropriate probe operation. At least one calibration parameter is adapted in response to a determination of an inappropriate probe operation and at least one operational parameter of the input channel is retrieved.

The signal analysis device has a plurality of input channels, each of the input channels capable of receiving an input signal from a respective probe and producing therefrom a respective output signal and a processor, adapted to process data representative of at least one of the output signals. A calibration signal generator generates a calibration signal for communication to at least one of said input channels via a respective probe. The processor, in a calibration mode, stores operational parameters of an input channel having associated with it a probe to be calibrated, verifies the calibration signal communicated via said respective probe is a calibration signal, enables the calibration of the probe to be calibrated, and restores to the input channel the stored operational parameters.

Manome et al. teach a method and apparatus for testing whether or not a probe has been calibrated. A square wave signal is generated by a calibration reference signal generator having a pulse width determined by the frequency of a clock signal from a clock signal generator. The square wave is applied to the probe and the probe output signal is

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coupled to a non-inverting terminal of a comparator. The inverting terminal of the comparator receives a reference signal level threshold voltage from a digital-to-analog converter (DAC). The output signal from the probe is compared to the reference level at a plurality of points along one cycle of the output signal for generating a binary signal. The reference level is iteratively increased or decreased until it is less than or greater than a minimum or maximum peak magnitude of the probe output signal by a small amount. The probe is determined to be calibrated according to whether the magnitude of the output signal at each point is greater or less than the reference level.

The Examiner asserts that Figure 6 of Manome et al. teach verifying that the calibration signal is a valid calibration signal, and avoiding the step of adapting if the signal is found to be valid. The flow chart of Figure 6 set forth steps for determining the calibration condition of the probe as stated at column 6, lines 42-43. The flow chart of Figure 6 does not teach verifying that the calibration signal is a valid calibration signal as is recited in Applicants' amended claims. The assumption made in Manome et al. is that a user has connected the probe to be calibrated to the calibration signal generator. The method in Applicants claimed invention does not make this assumption, and specifically verifies that the probe is communicating the correct calibration signal to the input channel. If a user inadvertently attempts to calibrate a probe while connected to a non-calibration signal, the method of the present invention will detect the presence of the non-calibration signal. Manome et al. does not teach, hint nor suggest verifying the calibration signal is a valid calibration signal.

Weller teaches a method and apparatus for automatic verification of a measurement probe functionality and compensation for a wide range of oscillating signal amplitude levels. The measurement probe is coupled between a source of the oscillating signal and a measurement device. The measurement device includes a digitizer for digitizing the output oscillating signal from the measurement probe. A controller stores in memory reference data values that are based upon the actual characteristics of the oscillating signal. The controller compares the digitized output with the reference data values to automatically determine whether the measurement probe is functioning correctly and is correctly compensated based upon the comparison. A report is provided to an operator on function and compensation verification using an indicator, such as a display coupled with the controller. Weller specifically states that the report would include items such as, probe good, probe bad, open ground lead, shorted probe, improper compensation, out of specification and the like. Nowhere in the teachings of Weller is there

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a hint nor suggestion, of verifying the source of the oscillating signal as a valid calibration signal as is recited in the amended claims of Applicants' invention. Weller only teaches comparing the measurement signal to the reference for automatically determining whether the measurement probe is functioning based upon the comparison.

Hoogendijk teaches an automatic calibration procedure for calibrating various time base setting of a measuring instrument. A microcontroller supplies a defined calibration signal through an output to time base circuitry in the measuring instrument. The microcontroller drives a digitally adjustable integrator to calibrate the time base circuit for each time base setting. A detection circuit detects whether the time base circuit is calibrated and stores calibration values determined in the calibration procedure. During normal operation, the microcontroller drives the integrator of the time base circuit using the stored calibration values for the time base settings.

Nygaard et al. teach a system and method for detecting a stable region in a data signal to facilitate the alignment between a data signal and a corresponding clock signal. The data signal and clock signal are part of a data stream flowing across a number of conductors of a bus in a target system. Measurement probes couple the data and clock signals to a logic analyzer that includes a processor and a stable region detector. The stable region detector receives the data and clock signal and generates a delayed data signal. The stable region detector selective delays the data signal and/or the delayed data signal to detect the trailing and leading boundaries of the stable region of the data signal for positioning the sampling clock in the stable region.

Neither Hoogendijk nor Nygaard et al. teach, hint nor suggest applying a calibration signal to a probe and verifying that the calibration signal communicated by the probe is a valid calibration signal as is recited in Applicants amended claims. Hoogendijk provides a calibration signal directly to the time base circuitry of the measuring instrument from a microcontroller and Nygaard et al. uses a data and clock signal from a target system being tested by a logic analyzer.
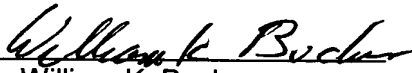
The recitation of applying a calibration signal to a probe and verifying that the calibration signal communicated by the probe is a valid calibration signal in independent claims 1, 19, 22 an 25 distinguish the amended claims over the prior art of record and are deemed to be allowable. The claims depending from the independent claims are also deemed allowable as depending from allowable base claims 1, 19, 22 and 25.

In view of the amendments to the claims and the accompanying remarks, Applicants respectfully request the withdrawal of the rejection of the claims 1-11, 13-19 and 22-26

under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) and pass this case to issue.

In accordance with current Patent Office practice, the Examiner is expressly authorized to call the undersigned agent at the number listed below if it is deemed the application is in other than condition for allowance or if prosecution can be expedited.

Respectfully submitted,

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